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ABSTRACT

The qualitative aspects of education are being increasingly recognized and education is perceived as a means for each individual to discover and learn for himself. With few exceptions, all school building in countries participating in the OECD Programme on Educational Building (PEB) suits the older concept of education as a transfer of knowledge and skills from teacher to pupil. Thus, measures to reduce cost and speed production are largely ineffective and resources are often wasted because the wrong kind of school is being produced. Changes in educational policy in many countries that imply consequences for educational building policy include an increase in the demand for preprimary and upper secondary education, increased attention to the needs of the underprivileged, provisions for dropouts, and redirection of education and training to ease entry to the labor market. Continued international cooperation is beneficial in terms of (1) the development and application of cost-saving techniques and approaches; and (2) the identification of new issues and areas to apply the techniques and approaches. (Author/MLF)

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PROGRAMME ON EDUCATIONAL BUILDING

EDUCATIONAL BUILDING POLICIES AND CO-OPERATION

2

EA 009 600

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT
PARIS APRIL 1977

The Organisation for Economic Co-operation and Development (OECD) was set up under a Convention signed in Paris on 14th December, 1960, which provides that the OECD shall promote policies designed:

- to achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability, and thus to contribute to the development of the world economy;

- to contribute to sound economic expansion in Member as well as non-Member countries in the process of economic development;

- to contribute to the expansion of world trade on a multi-lateral non-discriminatory basis in accordance with international obligations.

The Members of OECD are Australia, Austria, Belgium, Canada, Denmark, Finland, France, the Federal Republic of Germany, Greece, Iceland, Ireland, Italy, Japan, Luxemburg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The Socialist Federal Republic of Yugoslavia is associated in certain work of the OECD, particularly that of the Programme on Educational Building.

The Programme on Educational Building (PEB) was established by the Council of the Organisation for Economic Co-operation and Development as from January 1972. Its present mandate expires at the end of 1981.

The main objectives of the Programme are:

- to facilitate the exchange of information and experience on aspects of educational building judged to be important by participating Member countries;

- to promote co-operation between such Member countries regarding the technical bases for improving the quality, speed and cost effectiveness of school construction.

The Programme functions within the Directorate for Social Affairs, Manpower and Education of the Organisation in accordance with the decisions of the Council of the Organisation, under the authority of the Secretary-General. It is directed by a Steering Committee of senior government officials, and financed by participating governments.

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EDUCATIONAL BUILDING: POLICIES AND CO-OPERATION

Report by the OECD Steering Committee for Educational Building

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PREFACE

The preparation of this report has its origin in a decision by the OECD Steering Committee for Educational Building which felt it timely, nearing completion of the second period of its mandate, to put together in a succint form, an analysis of the results of past work under the OECD Programme on Educational Building (PEB), an identification of new issues facing Member countries as these emerge from recent trends in educational development policies, and an indication of the major areas where continued co-operation would be fruitful. As such, this report provided the basis on which the OECD Council in July 1976 agreed to renew the mandate of the Programme for a further period of five years as from 1st January 1977.

In endorsing this report the Committee expressed the wish that it should be widely disseminated in Member countries as a guide to future policies in educational building in relation to broader educational policies. The decision to derestrict the present document was taken by the OECD Council on 24th November 1976. It is reproduced with minor amendments up-dating the information on ongoing work - in the series of PEB Information Leaflets so as to facilitate its wide circulation in accordance with the wish of the Steering Committee.

GENERAL INTRODUCTION

1. During the period leading to the inception of the Programme on Educational Building (PEB) most Member countries were pre-occupied with meeting the needs of educational expansion. Problems centering on the "democratisation of education" were seen essentially in terms of how to give greater numbers of young people access to education and how to increase the volume of education they could receive before entering employment. It was natural therefore that school building policies should be seen in quantitative terms, and that attention should be concentrated on increasing rates of production and reducing costs. Several of the PEB activities have therefore pointed to conclusions relevant to these issues. At the same time, it emerged clearly from many of the activities of the Programme that speed and cost of production can not be isolated from equally important considerations about quality of product. As a consequence, PEB has necessarily turned its attention not only to the amount of school building but to the kind and quality of school building needed; and there it has proved important to see buildings as active instruments or tools for the very processes of education.

2. In this extension of interest beyond the quantitative and into the qualitative domain, PEB has reflected and contributed to a change of emphasis in the interests of the OECD Education Committee itself and indeed in those of the OECD as a whole. Where the Organisation has come to recognise that economic growth is inseparable from the inter-actions between growth and "the quality of life", so the Education Committee has recognised that quantitative expansion of the educational system is inseparable from the quality or kind of education to which expansion is intended to give access. The international co-operation promoted both by the Education Committee, by the OECD Centre for Educational Research and Innovation (CERI), as well as by PEB itself, has shown that in many countries this qualitative interest is marked by a common characteristic. This is to reject the concept of education as a transfer of knowledge and skills from teacher to pupil; and instead to perceive education as a means of releasing the powers of each individual to discover and learn for himself whatever is needed for self-fulfilment and for seizing, indeed creating, opportunities for a satisfying life. Acceptance of this concept has led to recognition of the need for curriculum reform, for new teacher roles and associated teacher training as a means of translating concept into action.

3. A second major conclusion from PEB is that, with only relatively few exceptions, virtually all school building in participating countries is currently conceived to suit, not the curricula for implementing this new concept of education, but the curricula appropriate to older concepts now by and large rejected. Thus, measures, to reduce cost and speed production are largely ineffective, and resources are often wasted because the wrong kind of school is being produced. Besides revealing this defect, PEB activities have also underlined its major causes and indicated remedial measures needed.

4. Curriculum change is, however, only one among many of the issues arising from the transfer of emphasis to the qualitative aspects of education. Educational policy in many countries is now facing changes which are even more far-reaching and which imply more complex consequences for educational building policy. Contrary to what happened in the preceding period, the increase in the demand for pre-primary and upper secondary education is more rapid than for compulsory education, and the demand for continuous or recurrent education in various forms increases even more rapidly. Over and beyond this quantitative change more profound and fundamental changes can already be discerned: increased attention to the special needs of the under-privileged, provisions for "drop-outs" from the conventional educational system, re-direction of education and training to ease the entry of school leavers to the labour market, recognition of new roles for education in local community development, the associated need to integrate the educational aspects of planning with those concerned with health and socio-cultural affairs. All these changes will be set against a background of continued demographic movement and changes in urban patterns consequent on the adjustments made necessary by environmental and energy-conservation forces.

5. Clearly, therefore, educational building problems will continue to loom large in the policy/planning concerns of Member countries in the years ahead. Quantitative problems will remain as will problems of re-structuring the school network to accommodate urban and demographic change; while qualitative problems of change in the nature of education itself, its objectives and methods, and in the pattern and periodicity of demand will continue to require new solutions for matching the kind of building provided to the new and changing activities which have to be accommodated. The solutions to such problems will be no easier to find in the future than in the past. If anything the problems will be more acute, both because of their complexity and because so much of the existing stock of school building will need to be converted to meet new purposes. At the same time, the role which is now increasingly seen for "school" as a focus for community development suggests that new problems will arise both in terms of co-operation with non-educational sectors having responsibility for building and buildings, and in terms of a need for more local autonomy wherever possible. Not less important for being less tangible is the need which can thus be discerned for the school building to gain a more inspiring image which represents community aspirations and achievement.

6. It is assumed that all countries, faced with continued heavy expenditure on educational building, will approach the problem of continued international co-operation in this field from the viewpoint of its value in contributing to minimising future expenditure, or at least securing maximum benefit from it, in terms of (a) the development and application of cost-saving techniques and approaches; (b) the identification of new issues and areas to which such expenditures could be most effectively applied. To facilitate consideration of these points, the present report is divided into two main parts, the first dealing with the results of the present Programme to date, the second with possible areas calling for continued international co-operation.

PART ONE: RESULTS OF PROGRAMME TO DATE

PAST AND ON-GOING ACTIVITIES

7. The Programme, in addition to the general exchange which it has facilitated between Member countries on overall educational building policies, has to date covered six separate activities, the results of which will all have been published by the end of 1976 (for a list of these see page 35).

Activity 1: Basic Documentation. The purpose of this activity is to meet the need for rapidly circulating up-to-date information on the substance of innovatory school building activity in different countries. To date, eight information leaflets have been issued, two more will be available shortly and others will follow.

Activity 2: Building Implications of the Multi-Option School. This study deals with the difficulties involved in creating the kind of environment best suited to increasingly diversified teaching/learning situations in secondary education.

Activity 3: Industrialised Building for Schools. This activity represents an attempt to clarify for policy-makers with responsibility for school building the considerations that need to be taken into account in using industrialised building methods to best advantage with respect to educational objectives and to national financial and administrative requirements.

Activity 4: Symposium on School Building and Educational Change. The Symposium, which was held in 1973 and brought together educationists, architects and administrators responsible for school building, provided an opportunity to exchange views and experiences on the changing bases and methods for efficient school building policies and to discuss how best to match the several interests involved.

Activity 5: Institutional Arrangements for School Building. This study comprised an analysis of the functions that need to be performed in school building and the institutions and skills required to perform them satisfactorily. The results of the analysis have been presented in the series of information leaflets.

Activity 6: Adaptability and Flexibility in School Building. This activity dealt with the problem of how best to avoid costly obsolescence in school building. On the basis of a number of theoretical exercises applied to real examples, an analysis was made of the managerial, architectural, technical and financial implications of providing for future change. In this analysis, a basic distinction has been made between adaptability and flexibility.

8. Four further activities are at present under way. They are as follows:

Activity 7: Co-ordination of School and Community Facilities. The purpose is to bring together recent international experience in the provision and use of co-ordinated community facilities for both school and non-school purposes; to analyse the problems which arise when co-ordination is used to seek a better utilisation of resources and to offer improved educational and socio-cultural possibilities; and to clarify the policy implications of such experiences. The results of this work were first presented at the Symposium referred to under Activity 10 and will be published in five volumes in the course of 1977.

Activity 8: Norms, Standards and Output/Expenditure Evaluation. This activity will be carried out in two stages: the first consists of a survey of school building norms and standards at present in force in participating countries; the second, based on the data thus gathered, will comprise a methodological study on key norms and input/output evaluation and control.

Activity 9: Furniture and Equipment. This activity will examine the conditions that need to be met in order that the design and provision of furniture and equipment, considered as an integral part of school building, can help achieve the closest possible match between activities and facilities and increase the ability of facilities to accommodate future change.

Activity 10: Symposium on School and Community Building in Relation to Urban Dynamics. This Symposium which was held in Sweden in the autumn of 1976 brought together people with responsibilities in the fields of education - in particular school building - community life and urban planning; its main purpose was to discuss common problems regarding the ways in which needs for educational, cultural and social facilities can be met jointly within the context of urban development and change and in the best possible conditions of space, time and cost. The report on the Symposium will be published together with the results of work under Activity 7 on which it was based.

9. Many of the conclusions reached as a result of these activities relate to operational issues of importance to educationists and architects as well as to administrators and those responsible for initiating or changing policies, especially policies relating to resource allocation. Within the confines of this report and to serve its main purpose, attention will be drawn only to those conclusions which bear most closely on the policies needed for effective resource utilisation, although much of the Programme's value relates also to methods for implementing such policies. For example, one of the most important conclusions, based on the findings of several of the activities, bears on the great variation that exists between countries in the resources put at the disposal of schools of similar type and comparable size. This applies in particular to the amount of floor area provided per pupil; the variations seem much wider in the case of secondary schools than in primary schools which appear to have been the object, practically everywhere, of more far-reaching rationalisation efforts. Thus the fact has been established that for secondary schools, floor areas can vary between countries from less than 7m2 to more than 20m2 per pupil. Proceeding from such findings, the work of PEB has been able to show that new methods for determining and formulating norms, appropriate techniques for implementation and control as well as suitable arrangements for promoting the effective collaboration of the various parties involved (administrators, educationists and architects) would lead to a closer fit between available resources and actual needs. The practical application of the many conclusions of the work undertaken so far should thus result both in substantial savings and in increased efficiency through the more rational use of available resources.

10. Much of the experience from which the conclusions are derived rests on general observations made in the course of undertaking the activities of the Programme, not all of which are directly the outcome of any one activity in itself. For this reason the conclusions will be dealt with in relation to four broad areas

of interest which space across all activities and represent different aspects of the overriding concern for effective resource utilisation. These are:

I. Translation of Concept into Action
II. Provision for Future Change
III. Procurement
IV. Institutional Arrangements

I. TRANSLATION OF CONCEPT INTO ACTION

11. Paragraph 1 has already emphasised the concept of quality of product, while paragraph 3 has remarked on the waste of resources which has so widely resulted from the fact that, despite high levels of expenditure, the buildings produced have not been the kind of tools needed for the effective processes of education. Experience gained from Activity 2 (Building Implications of the Multi-Option School) and Activity 3 (Industrialised Building for Schools) shows that neither the officials nor the architects carrying day-to-day responsibility for school construction can be blamed for this state of affairs; and that if a remedy is to be found arrangements must be made for the close involvement of educationists and of those responsible for resource allocation in the process of design. Such arrangements demand that the educationists concerned turn their attention much more than hitherto to visualising in considerable detail the kind of spaces, spatial relationships, equipement, furniture and installations needed if curriculum reform is to be put into effect.

12. This in turn leads to two further important conclusions. Firstly, where curriculum change is introduced from above - for example, by national decision as with the Swedish Läroplan - teachers fail to understand all the implications of the change for their working methods in the daily content and practice of teaching. Conversely, where curriculum change originates with the teachers themselves, either overtly or "unofficially", they are inhibited by the physical accommodation and accepted conventions about its use. In both cases, the building itself, or the need to design one, serves as a means of sharpening abstract ideas into proposals for concrete action. Thus the building is itself an important vehicle of change; so that building implications need to be considered, not as the last stage in the implementation of educational policies (as so often has been the case) but at the point when alternatives are considered for the policies themselves.

13. Secondly, as a corollary of this latter conclusion, a new role can be discerned for architects, or at least a new relationship between them and other decision-makers. Whereas their conventional role has been to design new buildings their new role is one of exploration: exploration, jointly with educationists themselves, of the physical implications of alternatives for educational development, directed not only towards the kind of building and equipment needed and of the consequent time and finance needed for construction or adaptation (which suggests a new relationship between architects and both financial and educational planners) but equally towards the concrete definition of the kind of educational activity which will ensue. The importance of such definition lies, first, in the operational nature of the activity concept which enables educational objectives or intentions to be translated into the facilities needed, and second, in the fact that

such definition can only be made through consultation among educationists as well as between educationists and architects. A further conclusion is that this joint exploration throws into relief particular needs for teacher training - a problem brought to the attention of the OECD Conference on Teacher Policies as the result of PEB activities and further developed in the information leaflet "Teachers and School Building" issued in September 1976. The need relates primarily to in-service training, both to familiarise teachers with the opportunities which new buildings provide, and, more importantly, to increase the number of senior and experienced teachers who can engage in effective dialogue with architects in formulating and developing design briefs.

II. PROVISION FOR FUTURE CHANGE

14. PEB experience has demonstrated that, on the whole, architects display a greater sensitivity to changes that are taking place than is the case with many educationists themselves who, under the inertia of the established system, are still led to see education as a class-based, teacher-centered process of exposition. Perhaps because architectural literature flows more freely across international boundaries, architects are conscious of the departures that have taken place from this conventional mode, sporadic and untypical though such departures may be. And while called upon to design schools to suit the conventional mode they have felt uneasy that the resultant buildings would prove ill-suited when, within the life-span of the buildings, the departures became more widespread. Even when they have been called upon to design for very different educational practices they have observed that education is in ferment and have felt that, however advanced the new practices, these too will eventually be modified or replaced. Some of those responsible for administering educational building programmes have shared the same anxieties. As a consequence, attempts have been made in some countries to provide for unforeseeable future change by constructing buildings which are easily adaptable.

15. In this context, PEB studies, in particular those undertaken within the framework of Activity 6 (Adaptability and Flexibility in School Building) which confirms and expands on some of the findings of Activity 2 (Building Implications of the Multi-Option School) have led to the following main conclusions:

a) New buildings can be designed in such a way as to provide a certain measure of physical adaptability which may facilitate meeting future change in educational requirements. But adaptability is a bad bargain if it is bought at the expense of higher capital costs or of sacrificing the known needs of the moment.

b) Unjustifiably high initial costs have occurred where adaptability has been seen primarily in terms of the relocation of building components, especially of internal partitions. It is much more important and much less costly to see adaptability in the fields affecting variety of environment and supplies of electricity, water and drainage. But here, as with partitions, relocation is less important than the facility to add, replace or remove.

c) Technological means for facilitating eventual adaptation are insufficient unless finance is made available for the adaptation when the need for it arises. Technological and financial policies need to be combined in a strategy of "pay-as-you-go" rather than "pay-in-advance".

d) If an exception can be afforded to this strategy, priority should be given to providing sites which are large enough to permit some eventual expansion of facilities. However, where land costs are high a preferable alternative may be available if the school can be located close to other community facilities, which themselves may then help towards meeting the requirements of any school expansion needed.

e) Present educational trends lessen the need for all the physical accommodation for a school to be contained within a single building or even on a single site. Therefore future planning needs to take account of all the built facilities available or likely to be available in the locality of a school.

f) The considerations under d) and e) above will be even more important for effective resource use when provision has to be made for the future issues of education which are described in Part Two.

16. The above conclusions all concern policies. In addition, a number of findings have emerged regarding building design and construction technology. These can be summarised as follows:

a) Some of the educational practices now gaining currency, especially those that have departed furthest from class-based expository teaching, are best satisfied by a balance of specialised accommodation or spaces committed to specific purposes on the one hand, and, on the other, general spaces suited to the wide range of activities which occupy the greater part of the timetable. A mix of accommodation balanced in this way and carefully planned (to allow for the free flow of activity from the one kind of space to the other) has proved to be capable of providing for many alternative educational requirements - including variations in the level and content of education as well as in the numbers accommodated. Where buildings can be planned in this way there is a greater likelihood that future change can occur without recourse to the inconvenience and expense of adaptation.

b) Critical to the approach just described is the furniture and equipment of the building, which needs to be as mobile as possible to permit easy re-arrangement. This is not only true of items like tables or chairs which are normally mobile in any event, but also of items which are conventionally expected to be fixed in a permanent position. Furniture, equipment and building are all inter-active and responsibility for providing them should not therefore be divided.

c) Without adding to first costs the technology of the structural frame with non-load-bearing partitions increases the potential for adaptability especially if deep beams instead of thick floors are used to cover the spans required. This is because services can then be added more easily when required in the future. Uniformly long floor or roof spans contribute little to adaptability and can prove expensive, diverting resources away from where they are really needed. More important is to adopt a structural frame which offers the possibility of a range of spans or structural lay-outs in order to match the diversity of accommodation which, in practice, is what is needed.

The ease with which future change can be accommodated depends, however, much less on the technology of construction than on how far the original building can be planned to provide the flexibility inherent in a wide range of specialised accommodation balanced with generalised accommodation.

17. All the findings in the preceding two paragraphs underline one overriding conclusion: while attention to adaptability (that is the ability to make physical adaptations) is necessary, it is no substitute for determined decisions about the form buildings and their equipment should take in the present. In making these decisions the objective should include that of maximising the degree of flexibility which minimises the need for future adaptation.

III. PROCUREMENT

(Defined as the various actions of the educational authorities - or other school building agencies acting on their behalf - as buyers on the market of buildings, equipment and furniture for educational purposes.)

18. In most of the activities of the Programme the question of costs has naturally been of prime importance. Indeed, it might perhaps be expected that the value of the Programme's activities could be simply expressed in terms of a percentage reduction in costs which would result if the conclusions of each activity were acted upon. That this is not the case is only partly due to the complexity of the issues or to the difficulty of making international comparisons of cost. In actual fact, in many of the cases studied no reliable account of costs was available. In many countries no attempt seemed to be made to distinguish the cost of super-structure of a building from the cost of the foundation and site works which are so much more liable to vary with micro-local conditions. Often the authorities concerned could only approximate the cost of furniture or of the land which the building occupied since such costs were often "buried" in more global figures. Even within countries there was seldom the possibility of comparing the value for money represented by a school for 1 500 lower secondary pupils at locality A as opposed to one for 1 000 upper secondary pupils at locality B: no common unit of measure existed. It is difficult to see how effective resource utilisation can be assured without a reliable method of cost comparison and accounting. Few, if any, countries have an adequate device for measuring the output of educational building against the financial input. The evidence can be drawn from the experience gained in Activity 2 (Building Implications of the Multi-Option School), Activity 3 (Industrialised Building for Schools), Activity 5 (Institutional Arrangements for School Building) and further evidence may be expected from Activity 7 (Co-ordination of School and Community Facilities) and Activity 8 (Norms, Standards and Output/Expenditure Evaluation).

19. Considerable technical problems arise in providing such a device. These centre around the difficulty of finding a suitable unit of measure: if the measure is square metre of floor area, does it measure educationally essential floor area or the overall floor area (possibly unnecessarily large) in which the educational is contained; if it is cost per classroom, where is the relevance if classrooms are disappearing; if it is cost per pupil what allowance can be made for any economies of scale? Nonetheless, it is important to show that, while the

difficulties are great, the lack of effective output/expenditure control has led to considerable waste of resources in the past and is likely to lead to even greater waste in providing for the complex future outlined in paragraph 4 above.

20. This complex future will require a much greater diversity of building and equipement than has commonly been needed for class-based teaching at the level of compulsory and upper secondary schooling. This could lead to the assumption that higher unit costs would result (supposing that a unit exists even if it has not been discovered!) and that policies of innovation would be defeated because their cost was assumed to be too high. Or, conversely, it could be assumed that the greater diversity could be obtained for no higher unit cost, with the result that the claims of education were inadequately represented and in competition with other claims secured a share of resources which was less than justified. Thus the policy conclusion to be advanced is that the appropriate nature and quality of educational building which underlies unit costs needs to be determined before decisions on resource allocation are finalised.

21. The norms and standards currently in force in many countries attempt to specify the nature and quality of educational building in absolute terms by means of standard schedules of accommodation or by prescribing the dimensions and shape of rooms. But to continue to do so overlooks the dynamics of education in which as new needs arise, old ones disappear. Norms and standards expressed in absolute terms therefore either need more frequent revision than is practical or, if not revised, create the risk that redundant provision will be retained and desirable innovation inhibited. Thus, a further conclusion is that the function, form and methods of applying norms and standards needs to be reconsidered in many participating countries. It could be added that unless this is done resources are likely to be dissipated either on meeting needs which no longer exist or on making provision for new needs that is so inadequate as to be less than fully effective.

22. That in so many countries educational planning has been less than fully effective can be noticed from the instances when recourse has been had to standard industrialised buildings as an emergency stop-gap. When the building industry of a country is unable to carry the loads imposed on it solely by conventional constructional methods its capacity can be expanded by the development of industrialised building systems. The tendency is for such systems to meet the needs of the market in general. If the particular (and different) needs of education are not to be neglected, educational interests need to be effectively represented in the development of industrialised building systems. Such representation demands a degree of intervention by educational authorities. Such intervention demands the closest partnership between architects and educationists in determining the kind of building which industrialised systems must be capable of producing. It also demands measures to promote a positive flow of communication between such partnership and system-producing agencies and between these and administrative mechanisms responsible for commissioning building, furniture and equipment. Furthermore, an effective cost control method, essential even where "traditional" methods are still in use, is even more essential when industrialised systems are used.

23. A further important conclusion, which derives as much from general observation in many activities of the Programme as from any one in particular, is that in many countries measures are needed to increase substantially the time available for the identification of requirements and for design processes to meet them before construction is due to start.

24. Finally, a conclusion which derives mainly from the study of industrialised building but applies equally when alternative constructional methods are used, is that procurement arrangements need to allow for individual building starts to be staggered rather than bunched in order to sustain an even load on the construction enterprises serving the region in which the buildings are located. Whether such control over starts can be exerted is, however, dependent on whether institutional arrangements allow for all new school building in a given region to be incorporated in a single annual investment programme.

25. The Programme has also drawn attention to measures which can be taken to combat the effects of inflation. One of the most important is the advance ordering of building materials and components which is greatly facilitated by such procurement devices as serial tendering and by the use of industrialised or standardised building methods. More favourable prices have also been obtained where such methods have been associated with consortia arrangements for bulk purchase.

IV. INSTITUTIONAL ARRANGEMENTS

26. Under this heading conclusions from PEB bear on three main themes, each important for the future. The first relates to inter-sectoral co-operation, the second to problems of local interests, and the third to innovation, especially by teachers.

Inter-Sectoral Co-operation

27. The new role envisaged for education as a stimulus in community development and the inter-action of education with other sectors of social activity, such as health and welfare, can be expected to have important consequences for building. Whereas it has been possible hitherto to see educational building as independent of building for other purposes, in future such independence seems likely to give way to interdependence. Initial findings of Activity 7 (Co-ordination of School and Community Facilities) show that many present examples of co-ordination of school and community facilities result from a desire to intensify the use of facilities and so save money. In many cases, the difficulty of finding sites which are sufficiently large and, at the same time, well-situated, the need to seek new uses for school facilities which have become too large due to the fall in numbers requiring schooling or the concern to make better use of money invested by avoiding duplication of provision largely govern the efforts made towards creating multi-purpose facilities open to a variety of public.

28. The study has also shown that motives, other than economic play as important a role. Projects of co-ordination reflect changes in the views on education which can no longer be defined within the sole realm of the school; it must form an integral part of global policies which aim at meeting a variety of cultural and social needs. Awareness of this trend, which gives rise to pressures from within as well as outside the educational system, if often at the origin of co-ordinated projects.

29. Another feature of such projects is that they are closely linked to environment planning. The concern for changing the role of school in the community, as well as the need for controlling at the same time a large number of variables in

order to ensure the balanced development of social policies, have made it necessary to deal with the provision of community facilities on a more global basis. Co-ordination of facilities thus results from the need for concerted action in the planning or renewal of populated areas.

Problems of Local Interests

30. Another conclusion which emerges is that methodologies need further development. If the facilities which are being co-ordinated often individually have known precedents, their co-ordination constitues a radically new venture compelling experimentation without the support of earlier experience. This difficulty is exacerbated by the fact that there is often a gap between the demands expressed in this type of venture and the possibilities open or the constraints imposed by the juridico-administrative framework within a given national context. Such projects thus presuppose a renewal or extension of local responsibilities and the establishment of new links between local, regional and national actions so that local initiatives can both receive the support they require and be integrated into more global policies.

Problems of Innovation

31. The above findings, which as yet are tentative, represent an extension of those drawn from the activities already undertaken and need to be seen in the overall context of OECD work in the field of education. The Education Committee's statement on policies for innovation draws specific attention to the desirability - if innovation is an objective of educational policy - to "creating an environment within which the school can innovate". If the school is to play a role in local community developments the need for such an environment and for a consequent degree of autonomy is underlined. The same statement also calls for the "involvement of teachers in R & D" as an essential preparation for an extension of role in which "the teacher would have to be prepared to detect and mobilise the educative influences on children outside the school as well as to co-operate with other teachers, specialists and counsellors within it".(1)

32. PEB activities have identified some tangible results of the teacher involvement which the Innovation Statement regards as desirable, results which have become manifest in the alterations which teachers have made or have called for in their physical accommodation. At the same time PEB has indicated that even the most innovative local initiatives need support from some kind of research and development mechanism which can serve a number of local elements. Cases have also been noted in highly decentralised structures when local units have lacked both the experience and the techniques to identify and communicate their requirements with sufficient clarity or to ensure that the buildings they provide are as cost-effective as they might be.

33. As far as educational building is concerned, the main function of such a support mechanism is to combine the efforts of educationists and architects, in each case wholly familiar with educational problems and practices, in the design of individual buildings, each of which represents a new stage of educational

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1) Policies for Innovation and Research-and-Development in Education, OECD, Paris, September, 1974.

development from which further developments can then diverge as local autonomy and innovation suggest. Building development projects of this kind are the vehicles through which educational development can be transformed from the abstract to the concrete reality of practice. Such development projects are also the vehicle by which unit costs can be determined; so that while serving localised needs they can also serve any centralised arrangements for appropriate resource allocation.

34. It will be noted that each of the above three themes are interlinked. New roles envisaged for education in community development, which underlie the consideration of local interests, both lead to and arise from the need for intersectoral co-operation, while innovation is itself implicit in any attempt to solve the problems that arise.

A FINAL OBSERVATION

35. The Programme might have been expected to concentrate solely on disseminating solutions to educational building problems. To some extent it has performed this function by drawing attention to new approaches which might have gone unnoticed. In the main, however, few fully satisfactory solutions have been found in the practical experience of Member countries. Thus the chief value of the Programme has proved to lie in identifying and analysing, not so much solutions, as the problems which underlie the absence of satisfactory solutions - problems the existence or nature of which participating countries have not fully appreciated and which as a consequence continue to reduce the effectiveness of resource utilisation. Nevertheless, the Programme has gone further than problem identification and analysis - it has indicated, in some areas at least, some methodological approaches to their solution. However, the ultimate value of international co-operation under the Programme will not depend merely on the conclusions which can be drawn from individual activities, but on the extent to which countries modify their policies and practice in the light of the analysis of international experience, and develop the methodological approaches to a stage of practical application.

PART TWO: FUTURE NEEDS IN INTERNATIONAL CO-OPERATION

INTRODUCTION

36. As remarked at the beginning of this report, educational building and its problems will call for continued close attention by Member countries. Pressures to limit public expenditure, far from lessening these problems, will make more imperative than ever the need to find fully cost-effective solutions to them. Provided participating countries are able to modify their practices and develop operational methodologies in the light of the preceding conclusions, then much can be achieved in this search for cost-effectiveness. However, the modification of national practice and the development of methodologies in an operational context themselves raise problems, regarding which international co-operation will continue to be of value.

37. In the last analysis, however, the justification for continued co-operation depends on two considerations: first, the nature and magnitude of the problems likely to confront participating countries in the next decade; and secondly the extent to which international co-operation is likely to assist in overcoming them.

38. In examining these main considerations it is necessary first to remember the impact made on future problems by past performance. No country budgeting for its educational future can start with a clean slate; and in future budgeting the resource represented by the existing stock of building is no less important than available finance or manpower. Secondly, whereas participating countries have hitherto seen educational budgets primarily as support for compulsory and higher education, additional claims for attention are now emerging as new issues in education. Thirdly, both the new claims and the old need to be seen in a context which itself is changing, rapidly in some countries, more gradually in others. On the one hand this context is social and concerns attitudes to education in its various forms, to the manner in which provision is made for it, and to the image of education of which buildings and facilities are the concrete embodiment; on the other hand it is physical and involves the relationship of school facilities to other aspects of the built environment. Each of these three areas of concern has an important bearing on the resources devoted to education and the proportion of resources needed for educational building, both new and existing. Considered together they indicate the magnitude of future problems and at the same time have implications for the form and content of co-operation in the exchange of information and experience. This section of the report is therefore sub-divided under the following four broad headings:

I. The Backlog of the Past
II. New Issues in Education
III. The Changing Context
IV. The Need for Co-operation

I. THE BACKLOG OF THE PAST

39. In recent years all educational systems have seen departures away from long-established practice in the direction of more effective (and more cost-effective) methods of teaching and learning. So long as such departures were confined to an innovating minority of schools, the fact that so many school buildings were unsuited to them constituted a barely perceptible handicap on an educational service as a whole. But as the more effective methods spread to become generally adopted the less such a handicap can be tolerated. So not the least claim now made against educational budgets is that for modifying the large existing stock of unsuitable building. Activity 2 (The Multi-Option School) has examined methodology in relation to new buildings but the methodological development for operational application needs to take account of old buildings also.

40. Many existing schools are situated in localities where a declining or shifting school-age population will result in uneconomic under-utilisation of facilities unless other users can share the same premises. This raises the question of how sharing can be effected with minimum inconvenience.

41. This represents one major problem area for the near future which, as will later become apparent, is exacerbated by changes in context. The problem raised by the backlog from the past cannot be solved in isolation but only as part of a larger concern which takes account of new educational issues also.

42. As will be seen from the section which follows these new issues go beyond the range of compulsory education. But before turning to them it must be emphasised that compulsory education will remain a problem area of central importance to educational building, and within this area the existing stock of building will become a major pre-occupation. The problems which arise need a three-pronged attack. First the methodologies already developed need to be extended to provide a model for the accurate and objective assessment of the capacity of any existing school to accommodate a given curriculum. Where the capacity falls short there will then be clear indications of the supplementary building needed. If there is spare capacity then it is necessary to know what alternative educational needs it could accommodate. The second prong of the attack demands an analysis of these alternative needs to establish the "match" between them and the spare capacity where it occurs. Finally, the alternative choices which remain open after the possible "matches" have been established need in turn to be related to alternative locations in the network of school buildings. The extent to which these problems are successfully attacked will have a highly important effect on the financial resources needed.

II. NEW ISSUES IN EDUCATION

43. If, as noted in Part One, the compulsory school-age population in many Member countries is stabilising or sometimes declining, evidence grows of a compensating increase in concern for the education of other age groups. Response to this concern is likely to give the problems of educational building a new dimension. These are the more pressing issues among those arising from the concepts encapsulated in the phrase "life-long education": early childhood education, the education of young people beyond the age of compulsory schooling and adult education. Because of their prominence each of these issues has been receiving close attention both by the Education Committee and by CERI. What follows is an attempt to summarise their characteristics and to indicate, as far as is possible at this early stage, their building implications.

Early Childhood Education(1)

44. Early childhood education is "receiving particular attention from policy-makers, first as a result of the comparatively recent acknowledgement of its crucial impact on lifetime chances, secondly because of its role in widening opportunities for women, and thirdly because it differs from the other sectors of initial education in not functioning through an already existing structure, so that its development is untrammelled by institutional inertia". Attitudes towards pre-school education vary widely between countries both with respect to the ages at which it starts and at which it merges with primary education, and

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1) Developments in Early Childhood Education, CERI, OECD, Paris, 1975.

with respect to its objectives, structuring, method and content, and this variation is reflected in the provision likely to be made for it. Some countries put greatest emphasis on the child's development through play, and some as involving highly structured activities which prepare the child for entry to school. Despite these variations, however, one feature is common to all countries, namely, the expectation that early childhood education can be an important factor in redressing the disadvantages suffered by many children - whether arising from poverty, or from the fact that the children belong to ethnic and linguistic minorities or suffer, with their families, from the problems of adjustment associated with migration from rural to industrialised urban life, or conversely, from isolation in remote and sparsely populated areas of the country. Because economic pressures militate against universal provision of pre-school education it is likely that priority will be given to those localities which stand most in need of its compensatory benefits.

45. When the compensatory aspects of early childhood education are examined in detail (as in the publication referred to), two features emerge which bear on the building implications. The first is the need for linking and co-ordinating educational and non-educational social polities so that problems of school, family, neighbourhood and the parents' working environment can be treated inter-actively. The second feature is the uncertainty, arising from the complexities of the issue, which at present characterises thinking on the wisest and most humanly-oriented action to be taken. From the need for co-ordination of policies may be inferred a need for pre-school building to include or be linked with accommodation for medical, psychiatric and social work and to be related effectively with housing and places of work. The uncertainty suggests the need for exploring a variety of solutions and for allowing, in any solution, for future change.

46. The building problems to be solved will concern, as they always do, questions of location, of the number of children the building is to serve, the number of teachers and auxiliaries, the extent to which parents are involved, and the nature of the activity - educational, medical or social - taking account of the links which may possibly be needed with primary schools. But only in relatively few cases does it seem likely to be economically feasible to provide new buildings tailor-made to match pre-determined activities. More often it will be necessary to convert old ones or to provide a mix of old and new. As a consequence, location, numbers accommodated and activities pursued will need to strike a balance between the theoretically ideal and the opportunities which can be found and maximised by skilful and imaginative collaboration between users and designers. To this extent effective policy-making may rely more than ordinarily on preliminary exploration of the means of implementation, especially in terms of the capital investment needed.

Post-Compulsory Education(1)

47. Post-compulsory education refers to provision for young people who have completed full-time compulsory education. For the purposes of the present review we are not concerned with those among this group who move straight from school to higher education, provision for whom constitutes a separate topic beyond the scope of this review. We are concerned rather with those who either go out into the

1) Beyond Compulsory Education, OECD, Paris, 1976.

labour market or to vocational schools or various schemes combining training and work. The growing interest in the subject stems from several causes, the chief of which are anxiety about the alienation of this group from society; and anxiety about long-term unemployment among school leavers as a whole and, more particularly, among those who leave immediately after compulsory schooling with employment prospects which are therefore the least favourable.

48. For many years the provision made for this age group in many countries was either in the form of apprenticeships lying outside the educational system, or, as either support or substitution for apprenticeship, in the form of vocational trade schools. In that such provision differed so much from general university-oriented education it has come to be regarded as socially divisive, especially as it has restricted opportunity by offering largely irreversible and limited choices, which have to be made too early in life. Finally, quite apart from the matter of social justice, the view is increasingly held that skills or specialisations directed towards too specific ends run counter to the need for continual adaptation of the work force to changing attitudes towards academic university-oriented education now demand that general education be infused with more practical and creative activity to make it more relevant to the life which lies beyond and outside educational institutions.

49. Among the widely varying approaches found in Member countries attempts to reconcile the above objectives represent a common theme. It is reflected most often in a re-structuring of the educational system which merges general and vocational schools into single institutions. Although such merging is by no means a complete solution to the many problems involved, it has immediate implications for building. It clearly implies that the merged institution must offer a wide range of options within its curriculum and a correspondingly wide range of physical accommodation and equipment. The report on Activity 2 (Building Implications of the Multi-Option School) has already made an important contribution towards solving the problems of providing widely varying accommodation of this kind with maximum cost-effectiveness. Nevertheless, as the report makes clear, further methodological development and much more accumulated experience are needed to remove what is at present a large element of guesswork. This is particularly the case in deciding the maximum number of students likely to engage in a particular activity for a given period of time (and thus needing a specific facility) as opposed to the number who could with certainty be expected to do so if all elements of the curriculum were compulsory, that is, in a fixed curriculum without options. Furthermore, there are additional features of post-compulsory education that underline the need for methodological development and the accumulation of experience.

50. First, the numerical flexibility just referred to is demanded not only by the range of options but by the fact that total numbers seeking post-compulsory education are difficult to predict and will vary from time to time. Secondly, current thinking suggests that much of it may be only part-time, at least as far as the school accommodation is concerned. In many countries the idea is growing that education for many in this age group may be both more useful and more attractive if it alternates in some way or other with employment(1) or if some of the educational activity takes place beyond the confines of the school itself (in industry, commerce, the social services, etc.).

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1) For a fuller discussion of this issue see Beyond Compulsory Education, op.cit.

51. Accommodation problems are not confined to those of flexibility. Another arises from the economic stringency which will certainly mean that only a small part of the global accommodation needed can be provided in new buildings. As far as possible the existing stock will have to be retained and if need be adapted. If vocational and general schools are to be merged into a single new institution, the danger will have to be averted that the old buildings, necessarily a reminder of old divisiveness, do not in fact help to perpetuate it.

52. Some countries see the merged structures for post-compulsory education as forming part and parcel of the institutions which cater also for basic secondary education. But even within these countries, as well as in others, there is a trend to recognise that in its psychological and social requirements, the 16 to 19 age group has less affinity with children of compulsory school age than it has with adults. Thus two main alternatives are now being explored: one, the provision of education centres reserved exclusively for 16 to 19 year-olds, the other to provide accommodation for them integrally with that for adult education. With either alternative the building problem then goes beyond questions of what facilities are needed, for what numerical flexibility is cost-effective. An important new question is raised: what kind and character of provision - curricular, institutional and architectural - will present an image which is attractive to these young people and not repellent like the image of school which they reject? Unless this difficult question is resolved the resources devoted cannot be effectively deployed because they will not in fact be used.

Adult Education(1)

53. Adult education in terms of the definition accepted by the Education Committee is "any activity or programme deliberately designed by a providing agent to satisfy any learning need that may be experienced at any stage in his life by a person who is over the normal school-leaving age and no longer a full-time student. Its ambit spans non-vocational, vocational, general, formal, non-formal and community education and it is not restricted to any academic level.

54. "For planning or administrative purposes the public authorities often seem to identify four broad areas of need:

(1) Formal education (parallel to the regular system)
(2) Basic education (for example, poverty action programmes)
(3) Liberal education (essentially leisure time courses for self-fulfilment)
(4) Vocational education (occupational training and re-training)

From the societal standpoint it may be more useful, however, to postulate three types of need:

(1) Improvement of individual competences
(2) Social and community education
(3) Self-fulfilment

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1) Learning Opportunities for Adults, General Report, Vol. I., OECD, Paris, 1977

55. "in a country where adult education agencies seek to do no more than satisfy articulated demand it inevitably happens that one or more of the above categories of need is neglected and that the distinctive needs of whole sectors of the population are ignored, above all those of the disadvantaged. It is, in fact, evident that although collective goals can be deduced from theoretical reasoning by educationists and others, only the public authorities, whether it be at the national, regional or local level, are in a position to ensure that facilities for adult education are distributed equitably and in accordance with public requirements and the specific requirements of designated target groups. This entails the specification of short- and long-term priorities both as between youth and adult education and within the adult education sector itself, for in practice no country can hope to satisfy all adult learning needs out of public resources simply because the cost would be exorbitant."

56. The same report reaches the conclusion that "if adult education is to appeal to all sectors of the community and if the present grossly uneven distribution of knowledge is to be redressed it is essential to treat the recruitment of underprivileged adults into adult education programmes as a high priority".

57. The building implications are themselves adequately illustrated in the section of the report dealing with resources: "As far as accommodation and other support services are concerned, adult education is the least demanding sector of education. The greater part of its requirements can be met from existing facilities provided they are made freely available. But currently there are two major difficulties. The first is that existing facilities are by no means always 'made freely available' and those which are available are frequently hedged in by restrictions imposed by the regular users. The second difficulty is that facilities are commonly available only during the evening and at weekends. In days when adult education was viewed exclusively or primarily as a night-time or weekend activity this was not unreasonable. However, now that so many adults - not only housewives and the retired - wish to study during the day-time it has become an irksome constraint. A theoretical solution to the accommodation problem is to create buildings for the exclusive use of adult education, but in the current period of financial stringency this is unthinkable on grounds of cost; even in a period of expanding educational budgets the cost might be considered exorbitant. It is necessary to assign some buildings exclusively to adult education, for example, residential centres and learning resource centres. And most metropolitan areas can afford to maintain at least one large single-purpose adult centre. But clearly the needs of adult education must largely be met by making use of existing educational plant, together with libraries, museums, art galleries, and other institutions under public control."

58. The three major areas that have been dealt with above are to some extent inter-related. Early childhood education cannot be separated, especially where it concerns disadvantage, from the education for parenthood; educational opportunities for youth overlap with those for adults so that the line between them is difficult to draw. This inter-relationship is perhaps fortunate; because it implies that as the content and method coincide so do the various needs for physical accommodation. To avoid unnecessary duplication of physical facilities will necessarily be a major objective in securing the effective use of resources. And as educational demand extends beyond the compulsory age so the pressure on resources intensifies. Thus the need to maximise the cost-effectiveness both of new and existing facilities is even greater now than in the past.

Lack of Precedent

59. All these issues, together with others which they will bring in train, are distinguished in the search for solutions from most of those connected with compulsory education, in that only to a lesser degree can they rely on precedent as a guide. Whatever changes have been made over recent years in the structure, curricula and methods of compulsory education, they are changes which have evolved slowly within a system which is more than half a century old. To decide the innovations required in the character, space standards, servicing and equipment of school buildings, the best guidance has been found in what teachers are trying to do (no matter whether by external persuasion or on their own initiative) in order to accommodate structural or curricular innovation within existing buildings. What happens at the moment or has happened in the past has provided a ready-made and well-defined point of departure. By contrast, while the policies currently being formulated for early childhood, post-compulsory and adult education may find some guidance from existing practice, they cannot expect to find useful precedents relevant to all the objectives they envisage.

60. It may be thought, for example, that ample precedents for early childhood education may be found in the French "écoles maternelles", or in Fröbel schools, or in various arrangements of comparatively long-standing for child care or health or training for parenthood. But each of these precedents is, so to speak, isolated. There is no precedent at all to serve as point of departure for comprehensive provision which treats child care, child development, pre-school education, family welfare, parental education etc., as mutually supportive in an integrated whole, or which relates this whole in a continuum with primary education. Similar examples can be found in the fields of post-compulsory and adult education. Yet it is precisely in the integration of formerly separate elements - some of which may never have existed in some countries - that the major problems lie. Thus, to say that the problems are unprecedented is not merely a figurative exaggeration: evolving and implementing policies for the major new issues means, in effect, a fresh start.

III. THE CHANGING CONTEXT

New Public Attitudes

61. Intensifying the problems of backlog and new issues are changes in context, to which even those countries which have met most success in educational building will have to adapt their practices if their success is to continue. One such change of context is marked by new public attitudes to authority, to education and to the built environment of which educational building is a component. These new attitudes have three characteristics: a reaction against uniformity, a growing dislike of large organisations and a demand for greater public participation in official decision-making.

62. Examples of the uniformity of modern life are so numerous and obvious that they need not be specified here. But nowhere is the reaction against uniformity so manifest as in the case of new building. Indeed attempts are now made to preserve even the least satisfactory existing building, not only because of what may take its place, but also for fear of losing yet another element of variety in the

urban scene. As a consequence, school building authorities will be under pressure to conserve as much as possible of old school buildings and, even where new needs arise, to convert old buildings for the purpose whether originally used for educational purposes or not. How to take account of this pressure without increasing costs or sacrificing educational advantage is yet another new problem to be faced.

63. The dislike of large organisations seems to stem from two causes, the first being that they are held responsible for much of the uniformity, the second that they are so difficult for individuals to influence. Thus the question is being raised whether assumptions about economies of scale have not become too easily accepted. One such assumption concerns the size of schools. As recently as 1970 an OECD "workshop" on Curriculum Change(1) averred that "for reasons of economy (the bigger the school the cheaper) and efficient deployment of staff, education will be centralised in larger secondary schools". But how much bigger is cheaper, and bigger or cheaper than what? And how large can a school be made before the economic benefit, if any, is offset by the disadvantage that the individual pupil or teacher feels trampled on by an organisational mammoth? Can a larger size, in organisational terms, be made more tolerable by dispersal of the buildings which house it, and what degree of dispersal is possible without disruption to curricular activities? Insofar as the economies are real, can they be obtained by collaboration between a number of smaller schools? If not, can other economies be made to offset their loss? Answers to these questions demand more than consideration of the content, method and organisation of educational services: they demand equal consideration of the balance between what is desirable and what is attainable in terms of built facilities.

64. The demand for participation in decision-making comes from a public which education itself has made more articulate and the communications media have made more critical. It is a demand for a new relationship between the individual and authority, or at any rate between authority and the smaller interest groups within which the individual can enjoy a sense of identity and exert his or her influence. It is another facet of the reaction against uniformity which presses authority to recognise, more than it often finds convenient, that policies must allow for a wider diversity of tastes and modes of living. Yet the Programme has confirmed that close-knit industrial nations, in which local communities are so interdependent, cannot manage their affairs without some mechanism (whatever is needed to make it politically acceptable) to resolve the inevitable conflict of local interests with the larger interest of society as a whole. Likewise, the Programme has brought into sharp prominence the disadvantage which small units (and even small authorities) suffer from want of the expertise which only large units or combinations of units are able to command. Nevertheless, the change in public attitudes means that authorities will need to respond more sensitively to local issues while continuing to provide the expertise needed and to perform the functions of control and co-ordination. How to do so constitutes in itself one of the problems for the future. That the need for a sensitive response is as much functional as political can be appreciated from the fact that the new issues of pre-primary, post-compulsory and adult education lie outside the range of compulsion and are, by definition, voluntary.

1) The Nature of the Curriculum for the Eighties and Onwards, CERI, OECD, 1972.

65. A further important conclusion drawn from the Programme bears on this future problem: those school buildings which prove most successful result in fact from the dialogue set in train when school building authorities and their architects take special care both to consult and to inform the opinion of those teachers who can be expected to take a lead in using buildings and facilities as positive tools in the educational process. An answer to the problem may therefore lie in developing a methodology for extending the dialogue to include other interests - such as those of parents, welfare services, employers and community pressure groups - besides those of teachers themselves. Unless the problem is solved there is considerable risk that cost-effectiveness will be reduced even below present levels and the financial burden of educational services will prove more difficult for national economies to carry.

Physical Aspects

a) Urban Areas

66. Most schools built in the last twenty years or so have been for new towns and suburbs. Even though many of them suffer, as instruments of education, from the defects mentioned at the start of this paper (paragraph 3), and even though few alleviate the monotony of their surroundings, they represent, in terms of health and convenience, a standard far superior to the old schools in central urban areas, many of which understandably embarrass the authorities responsible. Both the old school buildings and many of the newer ones form the backlog problem already referred to. Furthermore the new needs for pre-primary, post-compulsory and adult education cannot be met solely by new construction in new areas, since they so much concern the majority of all populations which lives in existing towns. Thus there is a change, not only in public attitudes, but also in the physical context in which educational building problems must be solved.

67. Against the background of this different physical context many new problems arise in meeting the new needs. First, how can the necessary provision be made without imposing intolerable extra costs? Preliminary studies indicate that to meet the new needs entirely by new, additional construction is unlikely to be economically feasible. Nor can it be assumed that the conversion of existing non-educational buildings will produce a sufficiently cheaper solution. It will thus be necessary to look as far as possible to using the existing stock of school building as intensively as possible. In that event some physical adaptation may probably be necessary: but this will often have to be supplemented by new building also, to make up for what adaptations alone can not provide. All these considerations means that the new needs cannot each be treated in isolation but as integrated with each other and with the backlog problem of making the existing buildings more suitable as instruments for modern educational processes.

68. Integral treatment of new issues and old brings into question another long-established assumption about the self-sufficiency of schools. Will a school continue to be seen as entirely self-contained, commanding the exclusive use of its own building, or will the requirements of education and the need to reduce costs be better satisfied if a school has exclusive control over only limited facilities and shares with others some kind of common resource centre? With a falling birthrate leading to a reduction of the compulsory school-age population will it be economical for schools to enjoy more space in buildings originally

designed for larger numbers, or will they have to accept the use of "their" building by other organisations - as an alternative, perhaps, to closing down altogether? More fundamentally still, is it possible that the notion of "a school" may be widened, so that for example, museums, local radio and T.V., factory training centres, leisure facilities, are seen not merely as adjuncts extending the school's resources, but as elements which form, with several schools, a single coherent educational institution. Answers to such questions will not be found simply by considering organisational issues alone but by considering them in the light of the facilities which are needed, and which, as the result of imaginative conversion or re-deployment, can be made available at acceptable cost. Whatever the answers may be it seems likely that educational building policies will need to become integrated with policies for other kinds of facility in which the community wishes to have an interest.

69. Even if sharing secures more intensive use of facilities economic necessity still seems likely to mean that provision has to be selective, with priority given to under-privileged localities. Here another aspect of contextual change emerges, that of urban renewal. For both economic and social reasons many countries are now seeking to limit town expansion by revitalising and renewing areas in existing towns which expansion has left derelict or almost abandoned. Steps towards this end, such as the increase in the ratio of housing to offices or other work milieux, and the introduction of new transport modes and networks, may increase the relative number of people seeking educational services. It will almost certainly change the pattern of population distribution. And the new population patterns will probably rarely coincide with the distribution of existing facilities. Thus in addition to the considerable problems of what kind of facilities are necessary (and can feasibly be provided) to meet the new needs, there is the equally considerable problem of where such facilities should be located to meet social and economic objectives in re-shaped facilities networks.

b) Rural Areas

70. The problems likely to face participating countries in the coming years are not, however, confined to densely populated towns. Already CERI is undertaking a project concerned with the opposite extreme: the problem of sparsely populated areas. This is a further aspect of the physical context which has until recently been largely neglected and thus represents a new problem area for the future.

71. To quote the note outlining the terms of reference of this project: "such problems are: the means (human and technological) of providing equality of educational opportunity and attainment between sparsely populated and more densely populated areas; the ways of promoting collaboration between school and community, between educational and other welfare services, between formal and non-formal learning; the means of giving support (including in-service education) to teachers isolated in small schools in remote places. How should we define a 'sparsely populated area' (henceforward 'SPAs')? The connotations of the phrase differ remarkably according to context. In terms of population density, it conveys something very different in England, say, and Norway or Canada; in terms of transport infrastructure, between the Netherlands and Australia or Turkey; and in terms of educational facilities, whereas in some Member countries SPAs are deprived, in other countries (as a result of the allocation of additional resources whether of a conventional or a novel kind) SPAs enjoy distinct advantages and display

technologically advanced features. For all such diversity, however, there is in all cases this common ground: in SPAs conventional schooling is very awkward, because, for geographical reasons, few children can be concentrated in any one place. In parallel, the number of teachers in any school is very low - often down to one alone. With this in mind, we can best define SPAs, for purposes of this Project, not in demographic but in functional terms. We shall be concerned with school districts in which sufficient children cannot satisfactorily be gathered every day from their homes to comprise a school divisible into normally homogeneous classes, and/or sufficient qualified teachers cannot reasonably be maintained to teach the usual range of specialisms."

72. The above quotation is sufficient to indicate the broader implications for school building. They relate to the size and location of schools, to their special functions in pedagogical terms as well as in terms of local community needs and to broader policies for overall rural development and revitalisation.

73. The importance of rural revitalisation is further increased when it is seen in relation to areas which are not particularly remote from towns or when the population density is not so low as to place the area concerned within the category of "sparsely populated" as defined in the CERI note. For the revitalisation of such areas is a necessary counterpart to urban renewal in the attempt to limit town expansion - even if it does not result immediately in the repopulation of rural areas but only in halting their depopulation. Moreover, when the enormity of urban problems is faced up to, it becomes evident that no solution to them is to be expected unless migration from country into town can be, in fact, reversed. This will not be achieved, of course, by turning the clock back to labour-intensive agriculture or a cottage-based industry operating at subsistence level. More probably will it be done by encouraging the rural location of suitable industry, services and housing in accordance with policies for integrating urban and rural renewal in support of each other.

74. The educational needs to be met in less sparsely populated as well as in sparsely populated areas cover the same range from pre-primary to adult education as those to be met in towns. The entirely different context however means that the building problems are also entirely different, and, being unprecedented, not yet capable of precise definition. But as policies emerge for dealing with such area policies - among which educational policy is only one - it will be important to make advance studies which will enable their consequences for school building to be brought into sharper focus. This is an area where, not less than in the urban context, it will be important to engage architects in the processes of policy-exploration as described in paragraph 13 of this report.

IV. THE NEED FOR CO-OPERATION

75. When backlog, new issues and changes in context are considered together, a strong picture emerges as to the magnitude of problems, or their range, which are confronting Member countries in securing the effective utilisation of their school building resources. We now turn to the need for co-operative efforts to find solutions, examining first the case for co-operation as such even if it occurs only within rather than between countries. We then examine the reasons why co-operation is needed at international level also; and look finally at the tasks towards which future international co-operation would be best directed.

Co-operation at Regional or National Levels

76. Complex building problems are not amenable to complete solution. Answers come more in the form of "sub-solutions" each differing from the other according to the particular compromise reached when conflicting objectives are balanced against each other. No great discernment is needed to see that some compromises are better than others, but which of the most promising are in fact to be preferred is impossible to predict with conviction: the proof lies only in the completed building once it is in use. It can be argued therefore that economic as well as political reasons make it expedient for central authority to concede the demand for diversity to which this paper has drawn attention; effective resource utilisation demands a variety of approach. It demands equally that experience gained from different projects should be systematically harvested and fed into future developments. That so many of the issues raised are without precedent, that new methodologies must be developed and a range of alternative approaches explored is in itself evidence that the widest possible co-operation is desirable in the exchange of information and experience, even if it does not extend beyond national boundaries.

77. It will be appreciated, too, that co-operation is needed well before projects have reached a stage when they can be evaluated in use, partly because the time lag would be unacceptable, partly because no country is sufficiently in advance of others in respect of the emergent issues. Experience gained in the Programme indicates that methodological development, like the lessons learned from education itself, needs to be close to practical application. Otherwise it is liable to be over-generalised in the worst sense of the term, i.e. remote from reality and without bite. Thus the immediate need is for co-operative exploration of suitable methodologies related as far as possible to operational projects which are about to start or are in the early stages of development. Co-operation then needs to continue to the stage where the methodologies are developed, elaborated or modified as operational projects evolve and reveal unforeseeable exigencies. Only later will it be possible for the more "traditional" form of co-operation to centre on evaluation and "feedback", although, of course, such co-operation will be equally of value once developments have proceeded far enough. There are thus four separable stages at which co-operation will be valuable:

Stage 1: Exploration of methodologies prior to operational action
Stage 2: Elaboration and modification of methodologies as operational projects evolve
Stage 3: Evaluation of projects
Stage 4: Reconsideration of methodologies in light of evaluation

78. Increased co-operation, on the lines just described, will be needed between the various interests inside the boundaries of individual countries - between central and local authorities, between them and the unofficial pressure groups which are gaining strength, and between the educational sector and other sectors concerned with social and environmental matters. No doubt, too, countries will continue to make bilateral arrangements when one recognises that it can learn from another.

International Co-operation

79. In considering the value of international co-operation the following factors need to be taken into account:

a) A single individual country may have too few operational projects in the pipe-line to provide the diversity of approach which is needed to enrich experience. For example only one region of the United Kingdom is likely to encounter the problems of sparsely populated areas (the Highlands and Islands of Scotland) as acutely as, say, Norway or Finland or Australia. However much responsibility may be decentralised, central government authorities will have tasks to discharge and obviously the only other authorities at this level whose experience they can tap are those of other countries.

b) Bilateral arrangements, useful though they may be, are open to two main objections. One is that they are liable to be based on a similarity of approach rather than on the diversity and variety which are best calculated to reveal the weakness of habitual assumptions. The second is that countries learn that others have useful experience to offer only when it is too late to join them in exploring methodologies prior to operational action. They become aware of the relevant experience from information published after projects have been completed when methodological issues have been obscured by the compromises of reality and the thinking underlying them has been forgotten. In any case, bilateral exchanges are often in only one direction - one country trying to learn from what the other has done rather than both working together in mutual support. Organised international co-operation on the other hand, can provide the possibility of identifying projects while they are all at a sufficiently early stage of development for mutual support to be either possible or effective. Experience from the Programme also shows that multilateral co-operation, far from excluding bi-lateral arrangements, can often form the starting point for making them effective.

c) International co-operation can also provide the opportunity for relieving the consideration of the methodological issues from immediate national or local pressures; or for disentangling general principle from pragmatic application in the course of operational development. Generalised methodologies will, of course, always need modification to suit national or local circumstances. But experience from the Programme shows that when national legal or administrative conditions prevent the application of a useful methodology there may be strong grounds for a measure of reform of the prevailing conditions. The political difficulty of promoting such reform can to some extent be eased if the need for it is seen to reflect international as well as national experience.

d) The growing demand for local autonomy, emphasised earlier in this paper, also has implications for international co-operation. Not only the local community or pressure groups within in, but teachers and students who also constitute the various facets of demand, may often find difficulty (mounting sometimes to extremes of resentful action) in accepting constraints which central or supra-local authority finds itself obliged

to impose. The consequent tension may well be relieved if representative local interests can be brought into the arena of impartial international discussion, where they may perceive more clearly that wider interests have to be taken into account.

e) Conversely, the response of local entities to change which is seen as desirable from the central viewpoint may be stimulated and re-inforced by the challenges implicit in co-operating (and even competing) with their counterparts in other countries. Their involvement in an international programme supported by central government could be especially effective for that translation of concept into action which the present Programme has shown to be so slow in happening.

f) Moreover, there is the matter of inter-sectoral co-operation. Throughout the whole range of education from early childhood, through compulsory and post-compulsory, to continuing adult education, it is now evident that education and the physical accommodation needed for it will extend beyond traditional boundaries into other sectors whose co-operation is essential. For this to happen the barriers between sectors (symptomised and symbolised by the buildings etc., which each sector controls) must be broken down. The forum provided by an international organisation can play an important part in the psychological preparation and encouragement which experience derived from Activity 7 (Co-ordination of School and Community Facilities) shows to be so essential.

g) Finally, we would emphasise that school building is by its nature a particularly fruitful field for international co-operation in that the necessity which building imposes for making decisions on concrete issues clarifies and brings into sharp focus wider aspects of educational and social and manpower affairs.

Fields of Interest

80. The consolidation of results from the present Programme, together with consideration of the new issues described above point to the following major fields of interest with which future co-operation would be concerned. Priorities from these fields would, of course, be determined by participating countries.

a) Methodological Studies

i) Methods of input/output evaluation. Few, if any countries have an adequate device for measuring (and thus comparing and evaluating) the outputs of educational building against financial inputs, both capital and recurrent. Methods need to be developed to overcome the considerable technical problems of providing such a device if the waste of resources which has occurred in the past is not to be followed by an even greater waste in providing for the complex future (see Part One).

ii) Development of a typology of activities. If buildings and equipment are to respond adequately to educational need, planning and design need to be based on close analysis of the activities to be accommodated. The concept of "activities", to be operationally significant, needs further development both theoretically and in terms of practical

application in development projects of the kind referred to in paragraph 33. A typology of activities is needed in particular for determining the kind of building which represents value for money (the objective of input/output evaluation), for a systematic assessment of the potential of existing buildings for accommodating new activities, and in particular for facilitating the participation of teachers and other user interests in decision-making.

iii) Quantification of Accommodation Required. It is not sufficient to know what kind of accommodation is needed for a given set of activities. It is necessary to know, also, the amount needed in relation to the numbers participating in them. As noted in paragraph 49, further methodological development and monitored experience are necessary to determine such amounts. This is particularly so in deciding the number of working places needed to accommodate a given number of participants when due regard is paid to the need for flexibility of operation which will cause variations both in the "given number" and in the time devoted to the activities concerned. Methodological development in this field is critical to a future in which the pressures on ressources of physical accommodation are so likely to increase.

iv) Adaptability and Flexibility demand further research to reveal more clearly than has been possible so far just what are the features and principles of plan form and layout as well as of furniture and equipment which most contribute to easing change of activity in the future. Experience gained when such changes are in fact made needs to be monitored over as wide a range of examples as possible. The "desk studies" undertaken in Activity 6 represent a pilot methodology on which further studies related to individual country needs could be internationally co-ordinated.

b) Development Work relating to New Educational Issues

We have drawn attention (notably in paragraph 33) to the need for combining the efforts of educationists, architects - and indeed of the other interests involved - in the design of individual buildings, each meeting the needs of a new educational development, from which further developments can then diverge as local circumstances suggest. Building development projects of this kind are the vehicle through which new concepts can be translated into the reality of practice and the realities of practice assist the crystallisation of new concepts. This is the kind of operational project to which the co-operation referred to in paragraph 77 above needs to relate. Co-operative studies in this field are needed, as opportunities present themselves in relation to pre-primary, post-compulsory and adult education and to the manner in which they are integrated, either with each other or with improving existing provision for compulsory education; and they need to be set in both of the physical contexts, rural and urban, which have been mentioned earlier.

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c) Policy Studies

i) Impact of methodological research and operational development on school building policies. All the issues falling within the methodological field, and all the lessons learned about them from development projects bear heavily on central issues of school building policy - resource allocation, unit costs, norms and standards, forward planning and procurement. All participating countries can expect to benefit from exchanging information and experience on the policy modifications implicit in research and development results.

ii) Public participation in formulation of school-building policies. Paragraph 65 has noted the successes which have resulted from a dialogue set in train when school building authorities and their architects are able to consult and inform the opinion of leading teachers. The number of these successes has so far been limited, partly because comparatively few authorities have taken such steps, partly because the great majority of teachers are so far behind the leaders in appreciating the opportunities open. Thus there is a pressing need to increase the awareness of this majority. But as paragraph 65 has also pointed out, there is an equal need to extend the dialogue to include wider interests than those of teachers alone. Indeed, the wide range of permutations possible in balancing desired goals with resource constraints makes it difficult to see how acceptable solutions can be found without wide consultation of a public which is kept fully informed of alternative choices. The measures that can be taken or are being taken to solve this double problem are a further topic on which international exchanges of experience would be invaluable.

iii) Inter-sectoral policy. The new issues in education, the urban and rural changes effecting school building networks, the need to consider school buildings proper as only one component of a larger system of educational facilities, and the interaction of education with health, social welfare, employment and housing, mean that educational building can no longer be considered in isolation. If physical resources are to be used as economically and effectively as possible educational building policy will need to be closely co-ordinated with policies for these other sectors. Measures to overcome the institutional inertia which tends to stand in the way of the necessary inter-sectoral co-operation form a further topic for international exchange of experience.

Working Arrangements

81. At its inception the present Programme arranged to:

a) maintain a register of major school building agencies operating in each participating country and in other countries where work of interest to the Programme is being undertaken;
b) maintain a classified index of current innovation and developments;
c) examine and report on problems of major interest to all or several participating countries, drawing attention to the solutions which have been found or attempted and to the consequent implications for policy or practice;

d) describe selected cases of special significance in terms meaningful to those not familiar with their educational and administrative context;
e) organise follow-up symposia and working meetings on topics of special interest and such visits and exchanges as may be required for the effective implementation of activities;
f) identify new areas of interest as they arise.

As work progressed items a) and b) were abandoned as insufficiently cost-effective; but all the activities of the Programme have been conducted under one or other of the remaining four.

82. Similiar arrangements should continue. However, to allow for the desirable shift of emphasis towards operational objectives, further arrangements should be made to:

a) identify projects for which preliminary methodological investigation is about to start or is in an early stage, and which are significant to the three major issues of early childhood education, post-compulsory education or adult education;
b) arrange for the confrontation of those responsible for different projects in different countries but relating to the same issue; the objective being to promote co-operation between the several interested parties on methodological development;
c) maintain the links so formed by periodical meetings to review operational projects as they evolve;
d) promote joint evaluation of operational projects by and with those responsible for them rather than by external experts alone;
e) wherever feasible, encourage joint development work among interested countries on specific topics, such as for example furniture and equipment;
f) publish and arrange for the dissemination of results from b), c), d) and e) as soon as they are available.

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SCHOOL BUILDING AND EDUCATIONAL CHANGE (Pearson, E.), OECD, Paris, 1975 (60 pages, £1.30 $3.25 F13,00)

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3. C.R.O.C.S.: A Swiss Industrialised School Building System (Lenssen, P.), 1973
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